

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-42. Cancelled.

43. (New) A filtering and measuring apparatus, said apparatus comprising:
a filter housing with at least one inlet and one outlet;
an oil filter element disposed in the filter housing, said element selected from the group of microfilters, ultra filters and nanofilters;
at least one measurement space in the filter housing; and
at least one sensor in a measuring device for the measurement of at least one characteristic of an oil located in the measurement space.

44. (New) The apparatus according to Claim 1, wherein the filter element encloses the measurement space.

45. (New) The apparatus according to Claim 1 wherein the filter element includes a filter material selected from a group consisting of cellulose and/or fiberglass and/or ceramic.

46. (New) The apparatus according to Claim 1 wherein the filter element is able to filter out particles with a size of less than 5 μm .

47. (New) The apparatus according to Claim 1 wherein the measurement space comprises cylindrical space disposed in the interior of the filter element.

48. (New) The apparatus of Claim 1 further comprising a shut-off device disposed upstream on an inlet for the oil.

49. (New) The apparatus of Claim 1 further comprising a removable housing cover adapted for replacement of the filter element.

50. (New) The apparatus of Claim 1 further comprising an insertion opening in the filter housing through which the at least one sensor can be inserted into the measurement space.

51. (New) The apparatus according to Claim 8 wherein the insertion opening for the measuring device is disposed on a top side of the filtering apparatus and the at least one sensor can be inserted from above into the measurement space.

52. (New) The apparatus according to Claim 8 wherein the insertion opening is substantially aligned with the measurement space.

53. (New) The apparatus according to Claim 8 wherein the insertion opening is adapted to be closed by a removable closing element.

54. (New) The apparatus according to Claim 8 further comprising:
a first retaining section in the insertion opening adapted for coupling to a second retaining section on the measuring device in order to position the at least one sensor stationary in the measurement space.

55. (New) The apparatus according to Claim 8 wherein the insertion opening is adapted to support the measuring device on the edge of the insertion opening during a temporary measurement and wherein a handle and a display unit of the measuring device extends outwardly from the filter housing.

56. (New) The apparatus according to Claim 1 wherein the measurement space is disposed proximal to an inlet for the oil to the housing.

57. (New) The apparatus according to Claim 1 wherein the measurement space is disposed proximal to an outlet for the oil in the housing.

58. (New) The apparatus according to Claim 1 wherein the at least one sensor is disposed in a measurement space proximal to an inlet for the oil and further comprising at least one additional sensor disposed in a measurement space proximal to the outlet for the oil.

59. (New) A filtering and measuring apparatus, said apparatus comprising:
a filter housing with at least one inlet and one outlet;
a removable housing cover adapted for replacement of the filter element;
an oil filter element disposed in the filter housing, said element selected from the group of microfilters, ultra filters and nanofilters;
at least one measurement space in the filter housing; and
at least one sensor in a measuring device for the measurement of at least one characteristic of an oil located in the measurement space, wherein the measuring device is disposed in an insertion opening in the removable housing cover.

60. (New) The apparatus according to Claim 17 further including a first retaining section adapted for coupling to a second retaining section on the measuring device in order to position the at least one sensor stationary in the measurement space.

61. (New) The apparatus according to Claim 18 wherein the first retaining section is disposed in an insertion opening on the removable housing cover and the second retaining section is disposed on the measuring device.

62. (New) The apparatus of Claim 17 wherein the insertion opening is adapted to be closed by a removable closing element and said removable closing element includes a first retaining section adapted for coupling to a second retaining section on the measuring device in order to position the at least one sensor stationary in the measurement space.

63. (New) The apparatus of Claim 1 wherein the at least one sensor measures at least one characteristic of the oil selected from the group comprising: dielectric constant, viscosity, pH value, TAN values (total acid number), TBN values (total base number) temperature, PC values (polar compounds), FFA values (free fatty acids).

64. (New) The apparatus of Claim 17 wherein the at least one sensor measures at least one characteristic of the oil selected from the group comprising: dielectric constant, viscosity, pH value, TAN values (total acid number), TBN values (total base number) temperature, PC values (polar compounds), FFA values (free fatty acids).

65. (New) The apparatus of Claim 1 wherein the sensor comprises a capacitor for the measurement of the dielectric constant of the oil.

66. (New) The apparatus of Claim 17 wherein the sensor comprises a capacitor for the measurement of the dielectric constant of the oil.

67. (New) The apparatus of Claim 1 wherein the least one sensor is arranged on a measuring head which is connected via an attachment to measuring electronics for the evaluation of the measured values.

68. (New) The apparatus of Claim 17 wherein the at least one sensor is arranged on a measuring head which is connected via an attachment to measuring electronics for the evaluation of the measured values.

69. (New) The apparatus of Claim 1 wherein the measuring device further comprises a display unit which is connected to the measuring electronics.

70. (New) The apparatus of Claim 17 wherein the measuring device further comprises a display unit which is connected to the measuring electronics.

71. (New) The device of Claim 17 wherein the measuring electronics of the measuring device is connected to an acoustic and/or optical display unit for displaying information on the state of the oil via a communication system.

72. (New) The device according to Claim 29 wherein the information can be optically presented on a display unit in the field of view of the driver of a motor vehicle.

73. (New) The device according to Claim 30 wherein the information can be optically presented with different colors depending on the state of the oil.

74. (New) A method of measuring a characteristic of oil comprising:
providing a filtering apparatus having a filter housing with at least one filter element inserted therein, said filter element selected from the group of microfilter, ultrafilter or nanofilter elements;

inserting at least one sensor of a measuring device into a measurement space located in the filter housing;

measuring at least one characteristic of the oil; and

evaluating the measured characteristic using measuring electronics that are connected to the at least one sensor.

75. (New) The method according to Claim 32 further including enclosing the sensor in a filter material of the filter element.

76. (New) The method of claim 32 further comprising:
positioning the filtering apparatus in a bypass flow of an oil circuit.

77. (New) The method of Claim 34 wherein the step of measuring is performed in an oil circuit which serves the purpose of lubricating an engine which is operated with a fuel containing RME (rape methyl ester) or biodiesel.

78. (New) The method of measuring a characteristic of oil comprising:
providing a filtering apparatus having a filter housing with at least one filter element inserted therein, said filter element selected from the group of microfilter, ultrafilter or nanofilter elements;

temporarily inserting a hand held measuring device having at least one sensor into a measurement space located in the filter housing;

measuring a dielectric constant of the oil using a capacitor;

evaluating the measured dielectric constant using measuring electronics that are connected to the at least one sensor.

79. (New) The method according to Claim 36 wherein the step of inserting the measuring device further includes guiding the at least one sensor into the measurement space through an insertion opening in the housing.